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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/038,916	01/08/2002	Ming Jia	71493-1042/pw	1307
7380	7590	06/10/2005	EXAMINER	
SMART & BIGGAR/FETHERSTONHAUGH & CO. P.O. BOX 2999, STATION D 900-55 METCALFE STREET OTTAWA, ON K1P5Y6 CANADA			GHULAMALI, QUTBUDDIN	
			ART UNIT	PAPER NUMBER
			2637	

DATE MAILED: 06/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/038,916

Applicant(s)

JIA ET AL.

Examiner

Qutub Ghulamali

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 January 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-41 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 18-32 and 34-38 is/are allowed.
- 6) ☒ Claim(s) 1-17, 33 and 39-41 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 7/3/03, 8/26/03
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Objections

1. Claims 1, 11 are objected to because of the following informalities: In Claim 1 and 11, line 22, the “the de-mapper”, be replaced by --the symbol de-mapper--, to establish a proper antecedent basis. Appropriate correction is required.
2. Claim 28 is objected to because of the following informalities: In Claim 28, line 2, the “at at”, be replaced by --on at--, to show proper clarification to subject matter as claimed.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 4, 11, 14, 17 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over ten Brink (US patent 6,611,513) in view of Stein (USP 6,175,590).

Regarding claims 1, 4, 11 and 14, Brink discloses a transmitter and a receiver adapted to transmit and receive comprising:
a symbol de-mapper (fig. 3, element 24), receiving as input a sequence of received symbols over the channel whose quality is to be measured, said symbol de-mapper being adapted to perform symbol de-mapping on said sequence of received symbols to produce a sequence of soft data

element decisions (see abstract, col. 1, lines 63-67; col. 2, lines 1-3; col. 4, lines 60-67; col. 5, lines 1020);

a soft decoder, receiving as input the sequence of soft data element decisions produced by the symbol de-mapper, said soft decoder being adapted to decode the sequence of soft data element decisions to produce a decoded output sequence (col. 5, lines 22-38);

an encoder(11), receiving as input the decoded output sequence produced by the soft decoder, said encoder being adapted to re-encode the decoded output sequence with an identical code to a code used in encoding the source data element sequence to produce a re-encoded output

sequence (col. 4, lines 60-67). Brink though discloses outputs of finger correlators are combined in a maximum ratio combiner, however, does not explicitly disclose a correlator receiving as input the sequence of soft data elements to produce a channel quality indicator output by determining a correlation between the sequence of soft data element decisions and the re-encoded output sequence. Stein in a similar field of endeavor discloses a (see abstract)

a correlator, receiving as input the sequence of soft data element decisions produced by the symbol de-mapper, and the re-encoded output sequence produced by the encoder, said correlator being adapted to produce a channel quality indicator output by determining a correlation between the sequence of soft data element decisions and the re-encoded output sequence (col. 3, lines 1-16). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a correlator to produce a channel quality indicator output by determining a correlation between the sequence of soft data element decisions and the re-encoded output

sequence as taught by Stein in the system of Brink because it can enhance the quality of the normalized correlation metrics such as the symbol error rate.

As per claim 17, Brink discloses a method of determining a channel quality comprising correlating a soft data element decision sequence with a second data element sequence, the second data element sequence being produced by decoding the soft data element decision sequence to produce a decoded sequence and then re-encoding the decoded Sequence (col. 1, lines 54-67).

5. Claims 2, 3, 5, 6, 12, 13, 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over ten Brink (USP 6,611,513) in view of Stein (USP 6,175,590) as applied to claim 1 above, and further in view of Jones et al (USP 6,215,813).

Regarding claims 2, 3, 5, 6, 12, 13, 15 and 16, Brink and Stein combined discloses every feature of the claimed invention. The combination however, is silent regarding symbol de-mapper is adapted to perform QPSK symbol de-mapping and Euclidean distance. Jones in a similar field of endeavor discloses a symbol de-mapper is adapted to perform QPSK symbol de-mapping and least squared Euclidean distance to the transmission symbol from the received symbol. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use QPSK symbol de-mapping and least squared Euclidean distance as taught by Jones in the system of Brink and Stein because it can enhance performance in bandwidth and system efficiency with relatively high processing gain.

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6. Claim 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over ten Brink (USP 6,611,513) in view of Stein (USP 6,175,590), and further in view of Isaksson et al (USP 6,865,232).

Regarding claim 33, Brink and Stein combined discloses every feature of the claimed invention. The combination however, is silent regarding a computer readable storage medium to store instructions for implementing the method. Isaksson in a similar field of endeavor discloses (fig. 4) the system can be connected to a computer interface to store various functional units and instruction for implementing the method. It would therefore, be obvious to one of ordinary skill in the art at the time the invention was made to use a computer readable medium to store the various instructions to the method claimed as taught by Isaksson in the combined system of Brink and Stein because it can provide useful information for recalling and carrying out the instructions on a computational basis.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. Claims 7-10, 39-41 are rejected under 35 U.S.C. 102(e) as being anticipated by Thomas et al (US Pub. 2002/0051498).

Regarding claim 7, Thomas teaches a method of measuring OFDM reliability/quality of an OFDM channel comprising:

receiving a sequence of OFDM symbols over the OFDM channel whose quality is to be measured (abstract; col. 4, section 0069; col. 6, section 0090);

symbol de-mapping said sequence of received symbols to produce a sequence of soft data element decisions (col. 9, section 0137);

decoding said sequence of soft data element decisions to produce a decoded output sequence pertaining to the source data element sequence (abstract; col. 1, section 0007; cols. 3-4, section 0062)

re-encoding said decoded output sequence to produce a re-encoded output sequence using a code identical to a code used in encoding the source data element sequence (col. 9, section 0137; col. 10, section 0141); and

correlating said re-encoded output sequence, and said sequence of soft data element decisions to produce a channel quality indicator output (abstract; col. 3, section 0060).

Regarding claim 8, Thomas discloses the symbol de-mapping is QPSK symbol de-mapping (col. 6, section 0090).

As per claim 9, Thomas discloses said sequence of received symbols comprises Euclidean distance conditional LLR de-mapping (col. 4, section 0062).

With reference to claim 10, Thomas discloses decoding of sequence of soft data element decisions to produce output sequence further comprises using a history of the soft data element

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decisions, and using information about encoding of the sequence of symbols transmitted over the channel (col. 6, section 0090).

Regarding claim 39, Thomas discloses a transmitter adapted to combine pilot and transmission parameter on a single overhead channel within an OFDM signal (col. 6, section 0091).

Regarding claim 40, Thomas discloses a transmitter wherein a set of transmission parameter signaling symbols are transmitted on the overhead channel with strong encoding such that at a receiver, they can be decoded accurately, re-encoded, and the re-encoded symbols treated as known pilot symbols which can then be used for channel estimation (col. 6, section 0091).

Regarding claim 41, Thomas discloses a receiver adapted to produce decode a received signal containing the encoded transmission parameter signaling symbols as modified by a channel, re-encode the decoded symbols to produce known pilot (col. 6, sections 0090, 0091, 0092).

Allowable Subject Matter

9. Claims 18-32, 34-38 allowed.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US Patents:

Balachandran et al (USP 6,215,827) shows a system and method for measuring channel quality information in a communication system.

Isaksson et al (USP 6,538,986) discloses a data transmission system using NQAM constellation.

Kaiser et al (USP 6,188,717) shows a method of simultaneously transmit digital data between stations.

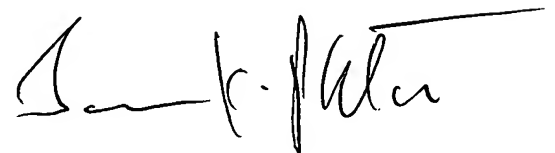
11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Qutub Ghulamali whose telephone number is (571) 272-3014.

The examiner can normally be reached on Monday-Friday from 8:00AM - 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on (571) 272-2988. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

QG.
June 3, 2005.



JAY K. PATEL
SUPERVISORY PATENT EXAMINER